REMARKS

Claims 1-14 are pending in the application, claims 10-14 being newly added herein. Claims 1 and 9 are the only independent claims.

Claims Rejections - 35 U.S.C. §§ 102 and 103

Claims 1-4, 6-7, and 9 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,759,854 to Wilson.

Claims 1-4, 6, 8 and 9 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,941,698 to Weis.

Claims 8 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Wilson in view of U.S. Patent No. 3.129,173 to Schulze.

The Examiner has indicated that claim 5 would be allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims.

Claim 1 Applicant has amended claim 1 herein to provide a better definition of the invention. Applicant respectfully maintains that claim 1 distinguishes the invention over the prior art and particularly over the art relied on by the Examiner in rejecting the claims of the instant application.

As set forth in original claim 1, a vortex grit trap comprises a generally vertically extending tank of circular cross-section including a separation zone and a grit collection zone. The separation zone has an inlet and an outlet for liquid flow to and from the tank, and in which liquid is circulated about a longitudinal axis of the tank. The grit collection zone is positioned beneath the separation zone in use. The trap further comprises a generally circular tank divider centered on the vertical longitudinal axis of the tank and extending transverse thereto. The divider defines a notional boundary between the separation and collection zones of the tank and

is of smaller diameter than the adjacent region of the tank so as to define with the adjacent tank wall an annulus through which grit passes from the separation zone to the collection zone in use. The grit trap further comprises means for generating a cloud of gas bubbles migrating in use upwardly through substantially the whole of the annulus whereby substantially all grit passing from the separation zone into the collection zone passes through the upwardly moving bubble cloud in the annulus so that organic solids settling with the grit are displaced upwardly by the bubbles into the flow within the separation zone while the grit passes through the bubble cloud in the annulus and into the collection zone. Pursuant to the amendment made herein to claim 1, the means for generating a cloud of gas bubbles includes at least one outlet or nozzle disposed approximately at the boundary between the separation and collection zones.

None of the references relied on by the Examiner, whether considered individually or collectively, either discloses or suggests a grit trap with at least one outlet or nozzle disposed approximately at the boundary between a separation zone and a grit collection zone. As set forth in claim 1, the outlet or nozzle is used in generating a cloud of gas bubbles migrating upwardly through an annulus between the separation zone and the collection zone, whereby organic solids settling with the grit are displaced upwardly by the bubbles into the flow within the separation zone while the grit passes through the bubbles in the annulus and into the collection zone.

Wilson discloses a grit trap having a separation zone, a collection zone, a divider and a vertical tube (22) that periodically discharges gas in the collection zone. As stated in the Wilson patent, in the sentence bridging columns 3 and 4, "Compressed air will now be discharged from the lower end of the vertical tube 22 at a reduced flow rate so as gently to air wash and lift the grit particles to wash out any organic particles that may also have collected in the chamber 11."

In contrast to applicant's invention as set forth in amended claim 1, the air outlet of Wilson is at the bottom of the collection zone, rather than approximately at the boundary between a separation zone and a grit collection zone.

Weis teaches a grit selector having a separation zone, a collection zone, a divider and a vertical tube 40 at the bottom of which are a plurality of air-distribution arms (56). As described in Weis, col. 3, lines 62-68:

> The lower end of air pipe 44 is in fluid communication with air chamber 52 which in turn is in fluid communication with a plurality of air distributing steady arms 56 which extend radially outward from chamber 52 for contact with the wall 22 of chamber 16. Steady arms 56 have openings (not shown) in the bottom sides thereof which permit air to exit therefrom.

Like the grit trap of Wilson, the grit selector of Weis has air outlets disposed at the bottom of the collection zone, rather than approximately at the boundary between a separation zone and a grit collection zone, as set forth in applicant's amended claim 1.

Claim 9 Independent method claim 9 has been amended herein to clarify that the generating or the cloud of gas bubbles takes place continuously during the rotating flow in the tank. This contrasts with the prior art where the generation of air bubbles is only a periodic scouring, generally at the end of a separation cycle.

As set forth in amended claim 9, a method of separating grit from an aqueous sewage flow containing, *inter alia*, particular grit and organic solids, comprises (a) generating and maintaining a rotating flow in a tank to permit gravity separation of the denser particles in the flow towards the axis of rotation, (b) causing the settling particles to pass through an annular gap in a first direction, and (c) during the maintaining of the rotating flow in the tank, causing a continuous cloud of gas bubbles to pass through the annular gap in an opposite direction, whereby the coaction of the settling particles with the bubble cloud separates lower density

organic solids from the settling particles and returns them to the rotating flow allowing the more dense grit particles to collect for removal.

Weis describes a scouring process that is periodic:

> Ideally, all of the organic particles will be caught in the upward flow of liquid and removed via trough 30, while all of the grit particles are delivered through opening 72 into storage chamber 16. However, since no system operates at 100% efficiency, there will be a minimum of organics interspersed amongst the grit which has settled to the bottom of chamber 16 and collected in grit receiving area 46. To rid the grit of these organics, an *air scour* is provided. With the control valve 58 remaining closed, pressurized air is *periodically* pumped down pipe 44 into air lift chamber 52. The air is then forced out the openings in steady arms 56 to gently air wash and lift the grit particles and thereby wash out the organic particles. (Col. 6, lines 16-29.) (Emphasis added.)

Wilson describes a similar process at col. 3, line 53 to col. 4, line3:

> Ideally, all of the organic particles will be caught in the upward spiral flow of liquid in the vortex created by the disc 25 and thus will pass out of the grit trap into the outlet channel 19. However, if some organic particles (dependent upon settling rate) do pass through the annular gap 28 into the grit storage chamber then they can be removed by *using the aforementioned air lift pump in reverse as an air scour* by closing a control valve 32 in a horizontal outlet tube 33 connected to the pump. Compressed air will now be discharged from the lower end of the vertical tube 22 at a reduced flow rate so as gently to air wash and lift the grit particles to wash out any organic particles that may also have collected in the chamber 11. (Emphasis added.)

Neither Weis nor Wilson teaches or suggests a process wherein, during the maintaining of the rotating flow in the tank, a continuous cloud of gas bubbles is caused to pass upwardly through an annular gap, as set forth in amended claim 9.

The present invention as described in claims 1 and 9, as well as the dependent claims, improves the separation of organic components from grit. Per independent claim 9, the improved separation is realized continuously during rotating flow in the separation tank.

Dependent claims not specifically argued herein are patentable in part because their respective independent claims are patentable. Concomitantly, the rejections of the dependent claims are moot in view of the amendments and arguments presented herein.

The claim amendments, if any, made herein are made without prejudice to applicants' right to pursue additional subject matter in a separate continuation or divisional application.

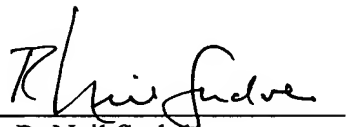
Conclusion

For the foregoing reasons, independent claims 1 and 9, as well as the claims dependent therefrom, are deemed to be in condition for allowance. An early Notice to that effect is earnestly solicited.

Should the Examiner believe that direct contact with applicant's attorney would advance the prosecution of this application, the Examiner is invited to telephone the undersigned at the number below.

Respectfully submitted,

COLEMAN SUDOL SAPONE, P.C.

By: 

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